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PLANETARY PHENOMENA FOR MAY AND JUNE, 1919

BY MALCOLM MCNEILL

PHASES OF THE MOON, PACIFIC TIME[1]

First Quarter...	May 6,	3^h34^m P.M.	First Quarter...	June 5,	12^h24^m A.M.
Full Moon......	" 14,	5 1 P.M.	Full Moon.....	" 13,	8 28 A.M.
Last Quarter....	" 22,	2 4 P.M.	Last Quarter...	" 20,	9 33 P.M.
New Moon.....	" 29,	5 12 A.M.	New Moon....	" 27,	12 53 P.M.

The first of the three eclipses of the year is a *Total Eclipse of the Sun* on May 29th. The line of totality runs from the Pacific just off the west coast of South America thru Peru, Bolivia, and Brazil, crossing the Atlantic and the Gulf of Guinea, entering Africa at Cape Palmas and ending at sunset just off the east coast of Africa. It will not be visible at all in North America except as a partial eclipse of very small magnitude in Central America, and not at all in Europe or Asia except in extreme southwestern Arabia. The most noticeable feature will be the unusual duration of totality—nearly seven minutes as it crosses the Atlantic. The principal cause of the great duration is the fact that the Moon passes its perigee and is nearest the Earth about a day before the eclipse, thus making its apparent diameter nearly a maximum; also the Earth is nearly at its greatest distance from the Sun, making the Sun's apparent diameter nearly the least possible.

The Sun reaches the summer solstice and summer begins at about 4 A. M., June 22nd, Pacific Time.

Mercury is a morning star thruout May, coming to greatest west elongation on May 5th; but altho the elongation is a large one, nearly 27°, there is less than an hour's interval between the rising of the planet and of the Sun on account of the fact that the planet is much farther south than the Sun. Superior conjunction is reached on June 11th, and *Mercury* becomes an evening star. By the end of the month the planet is well out toward greatest east elongation, and remains above the horizon nearly an hour and a half after sunset. The conditions for visibility are then very good. There will be rather a close conjunction between *Mercury* and *Jupiter* on June 26th, the latter 1°38′ south.

Venus is an evening star, setting about three hours after sunset up to the middle of June. After this the interval shortens up a little, altho the maximum apparent distance from the Sun is not attained until July 4th. The shortening on account of the more southerly declination of the planet counts more in the interval between setting of Sun and planet than the increase in apparent distance. There is a rather close conjunction of *Venus* and *Jupiter* on May 25th, the former passing the latter about 2° to the north.

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[1] The phenomena are all recorded in Pacific Standard Time. To reduce to the present "Daylight Saving Time" add one hour.

Mars is too near the Sun for naked eye view for the whole two months' period except possibly for the last days of June. It comes to conjunction with the Sun on May 9th, and will be a morning star until its next opposition, April 21, 1920; but altho it will soon move far enough away from the Sun so that it can be easily seen in the early morning, it will not begin to brighten up materially until nearly the close of the year. Its maximum distance from the Earth is reached in June, and will be about 233 millions of miles.

Jupiter is still in fair position for observation in the western sky in the evening but is drawing closer to the Sun. On May 1st it does not set until about five hours after sunset, and on June 30th only about one hour. It is, however, so bright that it will not be a difficult object up to the end of the month. It moves eastward about 10° in *Gemini*, and toward the end of June it is south of *Castor* and *Pollux*, about the same distance from the nearer one as the stars are apart. On June 25th it is about 2° south of *Venus*.

Saturn is also an evening star in the southwestern evening sky, following rather less than two hours after *Jupiter*. On May 1st it sets about two hours after midnight, and on June 30th about two hours before midnight. The planet is in the constellation *Leo* and moves about 4° eastward and southward toward *Regulus*, (*Alpha Leonis*), and at the end of June is less than 3° west of the star. As seen in the telescope the minor axis of the ring seems to be gradually diminishing, being less than one-fourth of the major. As the minor axis of the rings shortens we are looking at the plane of the rings more and more obliquely, the apparent total area of the rings diminishes, and the light from the rings grows less, so that in the summer the whole system of planet and rings sends us only a little more than half the light it did during the early spring.

Uranus is now a morning object, rising on May 1st a little less than three hours before sunrise and on June 30th about three hours after sunset, so that it is getting into a fair position for naked eye view. It is nearly stationary in the constellation *Aquarius* near its western border, moving slowly eastward until June 6th, and then moving westward, but the whole motion is only a small fraction of a degree. There is no moderately bright star near, by which the planet may be easily identified.

Neptune is in the western sky in the evening in the constellation *Cancer*, not far from the cluster *Praesepe*, but of course can not be seen without a telescope.